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Introduction

In 1994, the *Environmental Cost Savings and Permit Coordination Study* was conducted on behalf of the Washington State Legislative Transportation Committee. Within the general context of permit efficiencies and cost savings, the study addressed several issues related to wetland impact mitigation, wetland banking, and the watershed approach to environmental impact mitigation. A common point among these three issues was that WSDOT lacked a comprehensive strategy that would-guide future actions concerning wetlands and watershed management.

In response to the 1994 study, the 1995 Legislature developed and approved SB 5894, directing WSDOT to develop a long-term wetland management plan for WSDOT facilities. SB 5894 Section 1 identifies seven issues (see appendix A) that must be addressed in the strategic plan. The title of each section of this report includes identification of which of the seven issues it address. WSDOT is required to present the wetland strategic plan to both the Senate and the House of Representatives Standing Committees on Transportation during the 1997 legislative session. This strategic plan will serve as a medium for dialogue and decision-making among legislators, WSDOT staff, and others regarding long-term wetland management.

WSDOT staff used many tools in assembling the wetland strategic plan. A national conference was developed and hosted by WSDOT, to exchange ideas about wetlands and watershed management with environmental and transportation officials from around the nation. Academic research was conducted on several wetland policy issues. WSDOT staff worked with staff from various federal, state, and local government agencies, environmental groups, and many others to develop strategic plan recommendations.

Recommendations focus on both immediate and long-term strategies to address the issues. Where the course toward resolution is clear, the recommendations are precise and identify actions and who is responsible. Where the course toward resolution is unclear or more long-term in nature, recommendations reflect this and are more process oriented.

The reader will note that there is no executive summary within the narrative text of this report. The key elements, of WSDOT's wetland strategic plan are summarized in the tables found in Appendix B.

1. Prohibition on Lending the State's Credit/Title Transfer (SB 5894 Items 3 and 4)

Background

The Washington State Constitution (Article VIII, Section 5) prohibits the state from lending or giving its credit to any individual, association, company, or corporation. For the purposes of WSDOT's wetland and watershed management strategies, the critical question is whether this provision prevents WSDOT from:

- Developing wetland/watershed mitigation banks.
- Selling credits in a bank to other public entities or private parties.
- Transferring a completed bank site's title to another public entity or a private party.

Findings

The constitutional provision will not bar any of the subject activities as long as the state receives a fair value in return for whatever it creates or transfers. Current law also provides that WSDOT can transfer unused property to another public entity when it is "in the public interest" to do so. Property transfers under this provision also require that WSDOT receive fair value in return. WSDOT may develop mitigation banks that have more mitigation credits than the agency has immediate need for, as long as the extra credits will ultimately be exchanged for value. This would be monetary or "in-kind" contributions if the excess credits are purchased by a third party. The constitutional prohibition will not prevent transferring title to the real property used for a mitigation bank as long as WSDOT receives fair value in return.

Another way to address the title transfer issue is by not taking title to a wetland bank site. Regulatory agencies do not specifically require WSDOT to secure ownership of or to maintain mitigation sites, as long as the site is protected for the long term by a conservation easement or other means. The regulatory focus is on WSDOT's responsibility for the site's long-term protection from development. As an example, WSDOT recently signed a formal agreement with the State Parks and Recreation Commission to enhance two acres of wetlands within a state park as mitigation for unavoidable wetland impacts from an upcoming transportation project. Under the terms of this agreement, WSDOT enhances the wetlands on State Parks property and State Parks is responsible for all long-term monitoring and maintenance of the site., State Parks never relinquishes title to the mitigation

site and WSDOT achieves mitigation credits without the responsibilities of site ownership.

WSDOT has recently discussed this concept with parties such as The Nature Conservancy and other land trust and ecosystem management groups. These organizations are interested in pursuing partnerships with WSDOT if mitigation site selection can be closely coordinated with the criteria they use to select preservation sites. A more coordinated site selection process would result in increased probability of either title transfer or development of mitigation sites without taking title. Similar potential resides with other governmental agencies if partnerships for site selection are developed.

If the title to a mitigation site or credits from a mitigation site are transferred to another party, WSDOT must receive fair value for such commodities. While the traditional value received has been monetary, other values can be considered. For instance, site ownership entails a variety of monitoring and maintenance costs. These costs can be estimated over the life of the mitigation site; the savings to WSDOT if title and long-term maintenance responsibilities are transferred could be categorized as value.

WSDOT is currently testing alternative approaches that will enhance mitigation site title transfer as part of the Eagle Harbor cleanup /facility expansion on Bainbridge Island. WSDOT is purchasing property to develop as off-site mitigation for adverse environmental impacts caused by this project. Legal and transactional approaches are being developed that will enhance the Department's ability to transfer the title of the mitigation site to a third party. If successful, these approaches will be used with other environmental mitigation sites as appropriate.

The question of value also needs to be answered if WSDOT is to be a partner with other organizations in a wetland bank. To charge a credit price that captures all the costs of a mitigation site, several factors need to be included. These are: land purchase costs, site design and construction costs, long-term monitoring and maintenance costs, and any associated management and personnel costs not captured by the first three items. These costs must be prorated based on the amount of acreage/ functions being purchased out of a mitigation bank. Inflation is another variable that needs to be included.

Recommendations

- 1-1 Continue to identify groups interested in forming partnerships with WSDOT on site management and use.
- 1-2 Develop opportunities where wetland mitigation can be conducted on the property of others, or where sites selected are on property for which partners will want to obtain title.

1-3 Develop an accounting system of "value" to enhance the ability to use and market mitigation bank credits. Such a system would include a pricing structure for selling credits, a system for matching credit prices to mitigation acres and functions, and a decision-making process on matching mitigation impacts to mitigation bank credits within a watershed.

1-4 As wetland bank sites are planned, consider the future mitigation needs of partners such as cities and counties.

1-5 Continue to develop and use legal/transactional approaches that will enhance WSDOT's ability to transfer title to mitigation sites as appropriate.

2. Feasibility of Developing Wetland Banks and Implementing Watershed Mitigation Strategies (SB 5894 Items 2 and 5)

Background

The 1994 *Environmental Cost Savings and Permit Coordination Study* highlighted the need for more flexibility in providing mitigation options for transportation project impacts. Two key recommendations to help meet these objectives were: implement a watershed approach to the selection of mitigation alternatives; pursue wetland banking.

Watershed Approach

Watershed-based planning implies consideration of all resources, uses, and constraints within a defined area when developing and implementing restoration and enhancement projects. It is acknowledged as the preferred method to help solve ecological problems associated with the loss of resource function in Washington State. Mitigation or non-regulatory wetland restoration has generally been on an opportunistic, site-by-site basis. This has led to a piecemeal approach to watershed improvement efforts, which in turn often limits the ability of WSDOT or other stakeholders to address the highest priority needs of the watershed and results in functionally impaired sites. Site-by-site efforts also reduce the likelihood that WSDOT can enter into cooperative cost-sharing projects with local partners in the watershed.

There is strong support among WSDOT managers to develop and implement strategies that integrate a watershed approach into the selection, design, and construction of the Department's environmental mitigation projects. The primary objective of the watershed approach is to direct mitigation dollars toward watershed restoration and enhancement projects having the highest priority in the basin. This concept incorporates other WSDOT initiatives such as wetland banking, fish passage retrofits, and implementation of SSHB 2031' for stormwater projects. Executive management has made commitments to move toward a watershed-based approach, and a pilot project is now underway in the Snohomish Basin.

Wetland Banking

In the fall of 1994, WSDOT signed a Wetland Banking Memorandum of Agreement (MOA) with federal and state regulatory agencies. Wetland banks can provide more ecological value than mitigating on a project-by-project basis, since they consolidate compensatory wetland mitigation for small

An act relating to storm water facility charges for highway rights of way, passed by the 1996 Legislature.

wetland impacts into larger sites that may offer higher levels of wetland functions. Banks also have the advantage of providing wetland mitigation in advance of project impacts. When bank site selection and design are coordinated with local land use plans and watershed planning, a wetland bank can be instrumental in assisting local jurisdictions to meet their goals for protecting and maintaining wetland functions and values.

Coordinating WSDOT's banking program with local watershed plans requires significantly more work than project-by-project wetland mitigation; however, the Department believes the environmental gains can be significantly higher when a wetland bank is appropriate. Also, banks are projected to be more cost-effective to construct.

Under the wetland banking MOA, up to 50 percent of the bank's credits are available for use immediately after site construction, with the remaining 50 percent becoming available when the site has achieved its required performance standards (a minimum of five years after site construction). WSDOT is interested in pursuing wetland banking as one tool for meeting its commitment to watershed-based mitigation planning during the execution of its mission to provide a safe and effective transportation system for the people of the state of Washington.

Find'

It has been two years since the wetland banking MOA was signed. WSDOT is conducting negotiations on two potential bank sites but does not yet have a wetland bank in place. The watershed pilot project has been underway for approximately one year. Many of the barriers identified in this report were revealed as work progressed in the pilot project area.

During the process of working to establish a wetland bank and a watershedbased approach to mitigation, five areas have been identified that can pose significant barriers to achieving these goals. These are: funding, predictability, multiple jurisdictions, legal issues, and the lower requirements for advance mitigation compared to banking.

Funding

Mitigation funding for transportation projects is directly tied to projects; funds for the acquisition, design, and construction of mitigation sites come from each individual project budget. Banking requires a large up-front expenditure of funds. Since future projects that may draw from the bank, and their unavoidable wetland impacts, are not specifically identified or known, and with all mitigation funds currently tied to funded projects, WSDOT has

National Wetland Mitigation Banking Study, Institute for Water Resources Report 94-WMB-6

not had a mechanism for providing money for the acquisition and development of wetland banks. Opportunities to participate in cost-sharing watershed improvement projects with local stakeholders are lost when the expenditure of WSDOT mitigation dollars is limited to project construction time frames.

In response to the lack of funds available to begin development of wetland bank sites, alternative approaches have been examined. One of these approaches is land trading. WSDOT has traded parcels of surplus property with other public agencies for a variety of transportation purposes. While this approach has not yet been used for development of a wetland bank site, it is being considered for obtaining suitable property in the Upper Chehalis Basin for a wetland bank.

Another alternative approach is development of an Advanced Environmental Mitigation Revolving Account (AEMRA). Based on an existing program in which WSDOT purchases right of way well in advance of transportation project development, the Department proposes to establish an AEMRA in which a source of funds, independent from programmed, transportation project funds, would be used to finance the purchase and development of wetland bank sites as well as other types of advanced environmental mitigation. Purchase and development of these sites would occur in advance of transportation projects. When the transportation projects are developed and need environmental mitigation to meet permit requirements, the project can purchase credits from the pre-developed mitigation banks. Money used to purchase bank credits would go back into the AEMRA, allowing it to continue to help meet environmental mitigation needs in the future. Establishment of the AEMRA is proposed in a legislative bill being introduced before the 1997 legislature. The WSDOT Agency Request Budget for 1997-99 includes \$10 million for AEMRA seed money.

Predictability

Wetland banks are designed to be used for unidentified future mitigation needs. Since the impacts that may need bank credits are not known in advance and therefore not approved in advance, there is a great deal of uncertainty as to whether the bank's credits will be available for use at a future date. With the many layers of regulatory control and the problems sometimes encountered when pursuing permits for projects that anticipate using bank credits, predictable use of the bank for future projects is problematic. Part of the issue relates to multi-jurisdictional control of regulatory actions. What is approved on the state and federal level may be disapproved at the local permitting level. Another facet of the issue is the disparity between identified policy and the permitting process. On one of WSDOT's proposed bank sites, the local policy makers support the concept of banking, but the permit review section has been less than supportive. The

same problem would also hold true for any type of watershed mitigation project that involves off-site solutions to transportation impacts.

Another issue that lessens predictability is the need for and ability to use out-of-kind mitigation. When wetland banks or watershed-based improvement projects are considered, the priority need for the watershed may be different from the type of impact for which mitigation is required. For example, when wetland banks are designed to reflect and meet local watershed planning, the highest type and category of wetland needed by the area, based on regional and watershed priorities, often may not be the same as in the impacted area. In the larger context, most natural resource professionals agree that mitigating impacts to a low quality wetland that may be abundant in the area by creating or restoring a higher quality wetland that has suffered large historic losses and is now limited within the region is a preferred alternative? However, there is little guidance for local governments on how to evaluate appropriate trade-offs for out-of-kind mitigation.

A final issue is the instability of basin boundaries. Some jurisdictions require mitigation to occur within the same basin or sub-basin. However, for the most part the basin boundaries are not specifically mapped but are evaluated on a case-by-case basis during the permit review process. Without a solidly identified basin boundary, WSDOT does not have the ability to forecast what its future mitigation needs may be in order to estimate what size bank site or what type of watershed-based mitigation project would be appropriate for those needs.

Multiple Jurisdictions and Legal Issues

Washington is the only state in which up to eight different jurisdictions can have regulatory oversight on a project. Other state highway departments (such as Texas, California, and Virginia) that have managed to construct and use watershed-based mitigation projects or wetland banks are not required to obtain county or city permits.

With adoption of the Growth Management Act, local jurisdictions in Washington were required to develop ordinances to identify and protect

' For example, historic estuarine wetland losses in the Snohomish River Estuary have been estimated at between 74 and 80 percent of the original extent of estuarine wetland area (*Snohomish Estuary Wetland Integration Plan - 1995*). Wetland types anticipated to be impacted by highway expansion projects will be predominantly wet pasture, which are abundant in the watershed. The proposed mitigation bank in the Snohomish watershed would provide one opportunity to restore critical estuarine wetland habitat in the watershed. Agency regulators and biologists have indicated their preference for WSDOT to develop the proposed bank as a restored estuarine wetland. 'US Army Corps of Engineers (COE), US Environmental Protection Agency (EPA), US Fish and Wildlife Service (USFWS), State Department of Ecology (Ecology), State Department of Fish and Wildlife (WDFW), Tribal, County, City

sensitive and critical resource areas, and to manage growth in a manner that protects and enhances these areas. Many of the sensitive and critical areas ordinances were developed prior to the concept of watershed-based mitigation and the acceptance of wetland banking on the state and federal level.

In ordinances where mitigation is specifically addressed, it is often constrained to the same sub-basin as the impact area. Because of the linear nature of transportation development, most of WSDOT's projects will typically have small impacts in several sub-basins. Therefore, in most cases the requirement to mitigate in each individual sub-basin eliminates WSDOT's ability to construct and use a wetland mitigation bank, due to the small geographic area that could be served by the bank. The sub-basin constraint would also be likely to limit the Department's ability to direct mitigation dollars toward the highest priority needs for the larger watershed.

A second jurisdictional issue arises when a project, basin, or sub-basin extends across jurisdictional boundaries. Even where it makes sense ecologically to mitigate for some of the project impacts at an off-site location, some local jurisdictions have indicated they would not permit mitigation for impacts within their boundaries to occur outside of their jurisdiction.

Advance Mitigation Versus Mitigation Banking

Advance mitigation is distinguished from mitigation banking in that the impacts being mitigated are already known and specified. As with a bank, the mitigation site is designed and constructed in advance of the proposed impacts. Advance mitigation can consolidate mitigation needs for several projects on one larger site or can be constructed for individual projects. Like banking, advance mitigation is preferred by regulatory personnel, since the mitigation is constructed before wetland impacts occur. However, advance mitigation is more predictable and has less risk than banking, since regulatory personnel know what impacts will occur prior to their approval of the advance mitigation plan.

A second advantage to advance mitigation is that the level of detail and regulatory oversight (e.g., site selection, inspections schedule, credit accounting) is not as stringent as it is under the banking MOA. Under the banking MOA, bank site selection, design, performance standards, and credit accounting are all subject to review and approval by all members of the banking oversight committee. In some cases, this may include agencies that would not otherwise have jurisdiction over a particular project. With advance mitigation, only those agencies with direct regulatory jurisdiction need to be involved in approval of the advance mitigation plan.

Mitigation ratios are set in the banking MOA; with advance mitigation, compensation ratios can be negotiated for each site. In some cases, these may be lower than those required for a bank site, since the ratios required under the banking MOA for initial credit withdrawals are higher than those specified in the Implementing Agreement on Wetland Protection between the Department and the Washington State Department of Ecology.

Recommendations

Funding

WSDOT is requesting a ten million dollar revolving account to acquire and develop mitigation sites for banking, advance mitigation, and watershed based mitigation (proposed 1997 legislation). Based upon the revolving fund currently in use for right-of-way acquisition, funds from the revolving account will be used for initial mitigation site acquisition and development. The account will be replenished as individual transportation projects use the mitigation sites to meet permit requirements.

- 2-1 Continue to pursue the use of land trades with other entities or agencies. Trading WSDOT surplus property for future wetland mitigation bank sites can enable the Department to secure the land for some banks and mitigation sites.
- 2-2 Continue to develop funding strategies to support implementation of the watershed pilot project in the Snohomish Basin.
- 2-3 Establish and finance WSDOT's proposed Advanced Environmental Mitigation Revolving Account.

Predictability

- 2-4 Continue working with local stakeholders to help integrate transportation planning into local watershed planning efforts.
- 2-5 Revisit the Banking MOA and amend it to allow local jurisdictions having regulatory control to become signatories and voting members of the oversight committee for individual banks located within their jurisdiction.
- 2-6 Develop up-front written agreements with all stakeholders that identify permissible debit impact types, permissible use of out-of-kind mitigation, and defined basin or bank service area boundaries.

Improved decision-making science to evaluate appropriate trade-offs when considering alternative mitigation strategies will be needed.

Multiple Jurisdictions and Legal Issues

- 2-7 Continue coordinating with potential bank partners for the construction and use of bank sites that may be larger than the Department can use.
- 2-8 Seek legislative clarification on the relationship between watershed planning and the Growth Management Act.
- 2-9 Encourage the Interagency Wetland Review Board to work with the Department of Community, Trade, and Economic Development in offering guidance to local jurisdictions on how they might address innovative mitigation strategies, banking, and watershed planning in their sensitive and critical area ordinances.

Advance Mitigation versus Mitigation Banking

- 2-10 Consider advance mitigation for known projects.

3. Summary of Planned or Potential Bank Sites (SB 5894 Item 6)

Background

The 1994 Wetland Banking Memorandum of Agreement (MOA) was developed over a two-year period with state and federal resource agencies including the State Department of Ecology, State Department of Fish and Wildlife, Environmental Protection Agency, US Army Corps of Engineers, National Marine Fisheries Service, Federal Highway Administration, and the US Fish and Wildlife Service. The agreement set out the guidelines, procedures, and authorization to establish a wetland banking program in Washington State. Criteria for location, exchange ratios, development plan content, monitoring and maintenance, and overall operational issues are all addressed in this very detailed document.

The document provided for an oversight committee to approve and guide the process. The first step for WSDOT was to identify and obtain approval for candidate bank sites. This section discusses the progress made in identifying such sites.

Findings

The process of determining where WSDOT bank sites should be located was started in 1995 by determining where there was interest and need. By analyzing long-term construction activity and need for wetland mitigation among the six WSDOT regions, three priority watersheds were selected for efforts to establish bank sites. These are the Snohomish, the Puyallup, and the Upper Chehalis watersheds.

The next step was to discuss watershed needs with the planning, surface water management, and regulatory agencies involved in each of the watersheds. These discussions determined preferences and needs for the primary bank sites and associated wetland functions. Taking the local needs into consideration, along with needs identified in planning or resource studies, is an important aspect of determining the type of site to pursue. Needs identified included flood control (Chehalis and Puyallup) and development or preservation of estuarine habitat (Snohomish).

Potential bank sites were identified by studying available resources such as planning documents, by using work done within the Wetlands Reserve Program (WRP) under the US Natural Resources Conservation Service, and by WSDOT staff conducting independent field reviews.

Snohomish Watershed

A 260 acre potential bank site has been identified in the Snohomish Basin. This site is a top candidate in the WRP prioritization of 60 sites, and is also identified as an important site in the Snohomish Estuary Wetland Integration Plan. Known as the Poortinga Property, this site could be restored from pastureland to an estuarine system. It is located on Ebey Slough and is available for purchase.

The Poortinga site has the opportunity to provide large scale, low cost mitigation that meets a strong watershed need. However, the provision that all impacts must be mitigated in the sub-basin in which they occur greatly limits WSDOT's opportunity to utilize a bank site.

Puyallup Watershed

Locating asite in the Puyallup Basin is being coordinated with the Tahoma Land Conservancy. Their knowledge of willing sellers and of the needs of the watershed has been very helpful; we are currently reviewing sites in the basin with them.

Upper Chehalis Watershed

In the Upper Chehalis Basin a site was identified near Chehalis, west of 1-5. Known as the Greenhill site, it is about 50 acres in size and very important as a flood storage area. The planning staff at Lewis County also identified other sites in the county with high value for flood storage.

RecomMendations

- 3-1 Continue to identify appropriate sites beneficial to future planned transportation projects.
- 3-2 Continue to work with land conservancy organizations and local watershed plans to find and develop appropriate bank sites.
- 3-3 For potential wetland bank sites already identified, continue efforts that will lead to site development.

4. Preservation as a Mitigation Option (SB 5894 Item 5)

Background

When wetlands are permanently impacted by WSDOT or other developers, state and local regulations and policies require that compensation be through wetland creation, restoration, or enhancement. Most permitting agencies have not considered wetland preservation, which consists of purchasing and protecting an existing wetland, to be a desirable mitigation tool. Under current state guidelines for WSDOT wetland mitigation, preservation of existing wetlands is credited at a ratio of 10:1 or 5:1, and then only in conjunction with creation or restoration of additional wetland area at a minimum 1:1 replacement ratio⁵.

Findings

Although using preservation to compensate for project impacts does not conflict with state and federal regulations, it has been under-used as a mitigation strategy because of the perception among many regulators that it does not comply with federal, state, and local policies of "no net loss" of wetlands. This seems reasonable at first glance, since an acre of wetland preserved does not replace an acre lost to development. However, the last several years have shown that the trend of wetland loss continues in spite of "no net loss" policies. The reasons for continued loss include indirect impacts caused by population growth, regulatory exemptions, and noncompliance with regulations.

Wetland mitigation areas do not immediately replace lost functions. It is estimated that a wetland that is created or restored to compensate for a loss will take at least 30 to 50 years to become fully functional'. On the other hand, preserving a high-quality wetland that is under imminent threat from development allows the continuation of wetland functions in the location where they have historically been provided, and with no period of waiting for the wetland to mature. The cost of preservation is normally a fraction of that for creation or restoration, and the success of a preservation project is virtually guaranteed. Furthermore, wetlands under imminent threat are most likely to be those in rapidly developing areas where preservation of environmental functions is particularly critical.

Implementing Agreement between the Washington State Dept. of Transportation and the Washington State Dept. of Ecology Concerning Wetlands Protection & Management. 1993. 'Guidelines for Developing Freshwater Wetlands Mitigation Plans and Proposals. 1994. Ecology, WDFW, EPA, COE, USFWS.

There is growing recognition of the role of wetland preservation in compensatory mitigation. In Texas, preservation has been used as the sole compensation for wetland impacts at ratios ranging from 3:1 to 7:1. Interagency federal guidance for wetland banking allows preservation alone to be used for mitigation credit when special considerations are applied 7

Wetland preservation is an important component of any watershed management plan, but public and private conservation groups lack adequate funds to purchase all areas that are earmarked for protection. The acceptance of wetland preservation as a mitigation tool, with reasonable ratios and without the requirement to combine with creation or enhancement, would make this a more attractive option for WSDOT and others, providing a financial incentive to protect these important resources.

Recommendations

- 4-1 Promote preservation of existing high-quality wetlands under imminent threat as an acceptable mitigation option that can maximize environmental benefit per unit cost.
- 4-2 Form partnerships with regulators, planners, and implementors to develop a wetland preservation model for Washington State and facilitate changes in state and local guidelines. The model would outline criteria and procedures to ensure that appropriate controls govern the use of wetland preservation for mitigation credit.
- 4-3 Following development of this guidance, work with other agencies to recraft written mitigation guidelines.
- 4-4 Work with preservation groups such as The Nature Conservancy and local land trusts when proposing preservation projects, in order to utilize their existing expertise and credibility.

Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks. 1995. COE, EPA, US Natural Resource Conservation Service, USFWS, National Oceanic and Atmospheric Administration

5. Wetland Mitigation Site Monitoring (SB 5894 Item 1)

Background

Wetland mitigation is usually required when construction of transportation facilities results in unavoidable adverse impacts to wetlands. Monitoring WSDOT's compensatory mitigation efforts provides a way to track mitigation site progress and ensure permit compliance. Monitoring field components typically include: vegetation identification and assessment of cover by species, bird surveys and other wildlife observations, aquatic macro-invertebrate identification, measurement of the site's soil and hydrologic conditions, and annual photographic records for each site. Data collected during the May through August field season is analyzed and the results are presented in an Annual Monitoring Report that is distributed to the WSDOT Region offices and to regulatory agencies at the federal, state, and local levels.

The cost of wetland monitoring is currently estimated to average \$5000 per site, per year. Most sites are monitored for five consecutive years, for a total monitoring cost of \$25,000 per site. Monitoring of WSDOT sites began in 1988 with six sites. As of 1996, 24 sites were being monitored and an additional 12 sites have completed the five year monitoring period. It is projected that as many as 32 sites will be monitored during the 1997 season (ten additions and two sites with monitoring completed).

Monitoring costs are just one of many Wetland mitigation expenses, and comprise a relatively small percentage of the overall cost for any individual mitigation project. Although the number of mitigation sites will continue to increase over the next few years, with a parallel increase in costs, they are expected to level off at around 40 sites.

Monitoring is one of the primary tools WSDOT has for guiding future design of mitigation sites and influencing their success, thereby keeping the need for costly remedial action to a minimum.

Findings

There is a need to develop a framework for defining mitigation site success within which WSDOT and regulatory agencies can be in agreement. However, two issues must be resolved. First, experience gained from monitoring WSDOT mitigation sites indicates that the biological outcomes range from excellent to unsuccessful (not meeting written standards for success). This uneven biological performance undermines WSDOT's credibility with regulatory agencies. A concomitant issue is that regulatory agencies at the federal, state, county, and city levels do not always have

uniform expectations of WSDOT mitigation activities; this, in turn, fuels the regulated community's perception that wetland mitigation is a moving target.

To address the issue of uneven mitigation site performance, a well defined feedback loop is needed for continuous exchange of information between the various disciplines involved in WSDOT's mitigation activities. Because wetlands are ecologically complex, their design and construction draw on many specialties within the Department. The Annual Monitoring Report provides a means to disseminate information generated by monitoring efforts; some revisions to the report's format would enable this information to be used more effectively.

On the second issue, differing expectations among regulatory agencies as to what constitutes adequate compensation for wetland impacts may in part be related to a shift in understanding of wetland functions. An acre-for-acre wetland replacement has been the traditional regulatory approach to compensatory mitigation; however, replacement of wetland functions has lately begun to receive widespread attention.

Mitigation efforts that combine acreage compensation and replacement of wetland functions are in the early stages of development, and current monitoring methods reflect this. For example, the standards of success for mitigation sites tend to be oriented toward vegetation cover requirements more than to specific functions, although functions may be outlined in the site objectives. Monitoring addresses quantitative requirements well, but may not always adequately reflect the overall objectives. A step toward easing these problems is to develop a unifying link between assessment of the wetlands to be impacted, the mitigation design stage, and monitoring of the mitigation site, so that mitigation design relates back to information gathered during pre-impact assessment and forward to information to be gathered during monitoring. Focusing on wetland functions can provide this link while not excluding area replacement concerns.

There is another facet to the dual issues of uneven performance and lack of uniform expectations. WSDOT mitigation sites are monitored intensely (i.e., all field activities listed in the Background section, above) for five consecutive years. As of the end of 1996, WSDOT has amassed nine years of data. Results of data analysis suggest that five years may be an unrealistic span within which to achieve certain performance standards established for the mitigation sites. For example, a naturally occurring forested wetland may take hundreds of years to develop. While no agency is requiring or expecting WSDOT to produce a mature forested wetland within five years, the agreed-upon standards are often not achieved within five years. However, WSDOT mitigation sites nearing ten years of age show very different results: the desired standards have usually been met or exceeded.

Annual high intensity monitoring of a mitigation site does not seem to produce a significant increase of information between any two consecutive years. Varying the degree of intensity with which a site is monitored, reducing the number of intensive monitorings, and staggering them over a ten-year span will still provide WSDOT and regulatory agencies with the information necessary to determine permit compliance (whether the standards of success have been met) and will also be more cost-effective.

Recommendations

5-1 Work with regulatory agencies to develop a Memorandum of

Agreement for adopting an approach to wetland mitigation that will allow for flexibility as well as accountability.

WSDOT and regulatory agencies should take an adaptive management approach toward wetland mitigation; that is, each mitigation site - should be treated as an experiment on which data are collected and analyzed in order to inform future work. All parties have a vested interest in learning from mistakes as well as successes and will save money in the long run (WSDOT in reduced remedial action costs, and regulatory agencies in reduced enforcement action effort). Flexibility in assessing development of a mitigation site over the required monitoring time span and in comparing what was achieved to what was expected maximizes what can be learned from each mitigation endeavor.

5-2 Develop a strong feedback loop to include the multiple disciplines involved in all aspects of mitigation site design and construction; use the Annual Monitoring Report to help establish the feedback mechanism:

- Formulate specific questions in each area of expertise relevant to the mitigation process, to be answered through collection and analysis of monitoring data.
- Use the historic median values of monitoring measurements currently made on sites to set the performance standards for future sites.

Annually update the database statistics that produce the median values to guide future mitigation work. WSDOT staff should review these values annually and discuss results with staff from regulatory agencies to determine whether the median values continue to provide adequate standards for new sites.

- 5-3 State wetland impacts, mitigation objectives, and monitoring needs in terms of wetland functions and acreage in order to strengthen the link between pre-impact assessment, mitigation design, and mitigation site monitoring. Success in meeting acre requirements should be addressed by conducting a formal wetland delineation of the mitigation site after the final monitoring year.
- 5-4 Work with regulatory agencies to expand the time period for monitoring as appropriate for achieving the wetland functions desired:
- Conduct monitoring over five to ten years.
 - For five-year sites, conduct intensive monitoring in years one, three, and five.
 - For ten-year sites, conduct intensive monitoring in years one, five, and ten.
 - Perform informal monitoring during off years.

6. Wetland Mitigation Site Maintenance and Remedial Actions (SB 5894 Item 1)

Background

Whether wetland mitigation work consists of restoring degraded wetlands or creating new wetlands, mitigation sites must be maintained at a certain level to meet permit requirements. In some instances, sites may require remedial actions to enable them to meet permit requirements.

Site maintenance falls into one of three categories: short-term, long-term, or remedial. The primary purpose of short-term maintenance is to help ensure that a site maintains or exceeds agreed-upon performance standards. Shortterm maintenance activities are usually conducted during the years a mitigation site undergoes monitoring. They consist of preventing/ repairing vandalism, removing litter, and preventing /eradicating noxious and invasive weeds.

Long-term maintenance is intended to ensure that mitigation sites are protected from generally manageable factors (litter control, vandalism, offroad vehicle usage, target shooting, etc.) which, if left unchecked, would prevent sites from optimal performance of, their biological functions. Longterm maintenance activities ensure that the wetland will continue to function as designed.

Remedial actions are less routine. They include conducting additional work at a wetland mitigation site if monitoring has determined that the site is not meeting the standards of success required under the original permit. This work most often involves site replanting, although regrading or manipulating site hydrology is sometimes needed.

Since maintenance crews traditionally have managed highways, stormwater drainage systems, rest areas, and other transportation facilities, it was assumed, when WSDOT began to develop mitigation sites, that they would also undertake maintenance responsibilities for these sites.

Findings

Short-Term Maintenance

Short-term maintenance activities are easily identified; however, the responsibility for performing them, and the appropriate funding mechanisms, are not as easily distinguished.

Both training and funding of WSDOT maintenance forces focus on traditional highway-related facilities, not on wetland mitigation sites. Considering the immense amount of money invested in highway facilities, it is a top priority to maintain them in good working order and protect this major investment. To compound the issue, WSDOT's maintenance budget continues to shrink in the face of declining revenues. When choices have to be made in order to manage dwindling revenues, wetland site maintenance will not be able to compete with highway maintenance. Turning over all short-term mitigation site maintenance responsibilities to WSDOT maintenance forces is not a workable strategy without additional funding mechanisms and appropriate training programs.

An alternative to using WSDOT maintenance forces would be to use other WSDOT forces or volunteer labor. WSDOT wetland monitoring crews spend considerable time during the summer at wetland mitigation sites. While their duty is to collect scientific data, they could conduct some casual litter removal while they are at the mitigation site. Additionally, volunteer groups may be a source of untapped labor to help maintain wetland mitigation sites. WSDOT has successfully used volunteer groups for roadside litter removal through the "adopt-a-highway" program. Volunteer and ecological preservation groups may also be available for litter removal and weed control at WSDOT wetland mitigation sites.

WSDOT's Olympic Region has developed an alternative approach to fund maintenance (as well as remedial action) activities. Under this approach, when a construction contract is closed, a certain amount of money is transferred into an account that is managed by the Region's environmental manager. The environmental manager uses these funds to contract for whatever maintenance and remedial action services are needed.

Another option would be to designate a single WSDOT maintenance crew for wetland mitigation site maintenance activities. One crew could be trained for these activities and dedicated to maintaining wetland mitigation sites in several WSDOT Regions. The extent of short-term maintenance needs has not yet been quantified to determine whether the dedication of a full time wetland mitigation maintenance crew is warranted.

Long-Term Maintenance

When issuing permits for WSDOT wetland mitigation sites, the US Army Corps of Engineers requires that mitigation sites be maintained "in perpetuity." The meaning of "in perpetuity" is not clearly defined, making strategic planning for long-term maintenance difficult at best. Without clarification, there are many ways to interpret "in perpetuity," ranging from merely protecting a site from development, through long-term ownership or deed restrictions, to maintaining the wetland site in the same state as when it

was created (although this interpretation is counter to natural progression, since wetlands are dynamic systems that change over time due to natural ecological processes). Another interpretation could be that wetland mitigation sites cannot be impacted in the future even if avoiding them means impacting a pristine wetland. This interpretation places wetland mitigation sites in a more protected status than naturally occurring wetlands.

A long-term strategy cannot be adequately developed until "in-perpetuity" is clarified and agreed upon by the parties involved with WSDOT wetland mitigation sites. The Corps of Engineers and Washington State Department of Ecology have agreed to meet with WSDOT to reach an agreement on this issue.

Land management organizations have recently developed computer software programs that help to quantify long-term maintenance costs of ecological preservation sites. WSDOT is currently assessing the viability of using such programs to calculate the long-term maintenance costs of WSDOT wetland sites. If these costs can be projected with some level of confidence, then transportation projects whose funds were used to create the wetland mitigation sites could also fund an endowment that could be used to finance

long-term site maintenance as well as future remedial actions if and when they are needed.

Remedial Actions

The biological performance of WSDOT mitigation sites has ranged from excellent to not meeting written performance standards. Permits require that if these sites do not meet stated standards, they must be repaired or redeveloped. Once again, the key questions are who should perform the remedial actions and how the actions will be funded.

The issue of who should conduct remedial actions has not been clarified. WSDOT maintenance forces are an option; however, as discussed above, they typically are not trained to carry out the type of work required to rehabilitate a wetland mitigation site. Recently, WSDOT developed an on-call consultant agreement with the Washington Department of Ecology's Washington Conservation Corps (WCC). The WCC is very experienced with site plantings, slope stabilization, riparian rehabilitation, and a wide variety of other bio-engineering activities. If funds can be secured for wetland site remedial actions, WCC would be a logical and cost-effective choice for conducting some of this work. WSDOT would also contribute to filling a social need by using the WCC, since they employ at-risk youth who need work experience, as well as displaced workers who need retraining.

Currently, there are no funding mechanisms for remedial actions on wetland mitigation sites that do not meet written performance standards. In the past,

various sources of discretionary funds have been secured to finance these actions. The proposed WSDOT 1997-99 budget includes a funding request of \$246,000 as dedicated funds for ongoing maintenance of sites and repair of certain wetland mitigation sites that have already shown a need for remedial activities. This is a short-term solution for immediate needs but does not address funding for future needs. If costs for remedial actions can be projected with some level of confidence, then transportation projects whose funds were used to create the wetland mitigation sites could also fund an endowment to finance future remedial actions, if needed.

Recommendations

Short-Term Maintenance

- 6-1 Quantify, by using the Annual Monitoring Report, the amount of short-term maintenance work needed at WSDOT wetland mitigation sites. These activities should also be separated and matched with various resources in a logical manner.
- 6-2 Have WSDOT maintenance crews address vandalism and noxious weed control/eradication, and WSDOT wetland monitoring staff participate in casual litter removal while on site to conduct monitoring activities.
- 6-3 Identify and use volunteer groups for litter removal and weed control. The Annual Monitoring Report can identify needs and necessary maintenance activities.

Long-Term Maintenance

- 6-4 Complete work with the US Army Corps of Engineers, Washington Department of Ecology, and others involved with wetlands mitigation in Washington State to reach an agreed-upon definition of "inperpetuity."
- 6-5 Once agreement is reached, develop a long-term maintenance strategy for WSDOT wetland mitigation sites.
- 6-6 Identify or develop a method to project long term mitigation site maintenance costs so they can be adequately funded.

Remedial Actions

- 6-7 Fund current remedial action and maintenance needs at select WSDOT wetland mitigation sites by including the proposed \$246,000 funding request in WSDOT's approved 1997-99 budget.
- 6-8 Establish a permanent funding mechanism to finance future remedial actions for wetland mitigation sites. Remedial actions should be financed by transportation projects that necessitate creation of wetland mitigation sites.
- 6-9 When appropriate, use the WCC for performing remedial actions at wetland mitigation sites.

7. Wetland Habitat Functions and Values/Mitigation Credits (SB 5894 Item 7)

Background

It has long been recognized that wetlands provide many important natural functions; protection of wetlands plays a significant role in WSDOT's environmental analysis of transportation projects. Evaluating potential project impacts, and planning and evaluating compensatory mitigation, require a means for assessing and comparing wetlands. This would include ways to describe and classify various physical characteristics (e.g., size, vegetation type, stream connections), as well as means to assess relative ecological functions. In assessing wetlands, two general concepts play a role:

Wetland Functions are the biological and physical processes (what wetlands do); for example, flood storage, pollutant removal, and habitat.

Wetland Values are the social context for functions (their importance to humans).

Most scientific field studies focus on functions or indicators of functions, while regulations and policies reflect wetland social values.

Finding

For project analysis and permitting, wetlands are typically described according to their size and vegetation class (i.e., emergent, scrub-shrub, and forested classes). The assumption is often made that a wetland's vegetation class is associated with its relative level of ecological function; in other words, the more developed the vegetative community, the higher the ecological functions provided. While this is generally true, vegetative structure is not the only factor governing wetland processes.

WSDOT routinely uses the four tier rating system developed by the State Department of Ecology. This system ranks wetlands into one of four categories using various physical features including vegetation communities, habitat diversity, and connectivity to streams and buffers. It allows for a fairly rapid assessment that rates wetlands for comparison, but it does not identify or quantify the specific functions they provide.

Mitigation planning is based largely on the characteristics of size and classification. The general intent is to design mitigation that replaces or improves upon wetlands impacted by transportation projects. Mitigation generally uses ratios to determine tradeoffs between impact areas and mitigation sites, particularly when in-kind replacement may not be feasible..

A higher ratio is used to attempt to offset ecological losses when a highly rated wetland is impacted and replaced by a wetland with a lower rating, or when there is a time lapse between impact and mitigation.

Multiple Jurisdiction Issues

WSDOT works with many regulatory agencies in the course of project development. Wetlands are regulated at the federal, state, and local levels, and there is variability in expectations among different agencies for project analysis and mitigation development. Local governments have the most variable regulations and each may have its own unique wetland rating and mitigation ratio systems. Project proponents must tailor mitigation to fit the most stringent regulations..

Classification -Based Ratios and Wetland Functions

Ratio systems for wetland mitigation are generally fairly simple to follow and are probably the most frequently used means of mitigation planning. At the same time, ratios can lead to high mitigation costs, particularly where land costs are elevated. The ratio approach sometimes overlooks either site specific attributes of wetlands or specific local needs for a certain wetland function. Ratio systems do not specifically address wetland functions and are not always easily related to watershed management goals.

Tools other than ratio systems are used to approximate measures of ecological function (Wetland Evaluation Technique, Habitat Evaluation Procedure, and others); however, none of these is completely satisfactory for WSDOT's needs. Some were developed for wetlands throughout the United States and seem too generalized for effective use. Others require more elaborate analysis than is feasible for a typical WSDOT project. The result is that the most common means of assessing wetland functions is the professional judgment of the wetland scientist conducting the investigation. There is a need for improved methods to assess wetland functions. WSDOT is currently evaluating existing methods and looking for ways to modify them to meet the Department's requirements.

New Assessment Tools in Development

WSDOT is currently involved in an interagency effort to develop a new methodology for wetland functions assessment. The project is being coordinated by the State Department of Ecology with funding from the US Environmental Protection Agency. The method, called the Hydrogeomorphic approach (HGM), reflects a national direction in wetland science to improve understanding and assessment of wetland functions.

The premise of this method is that wetlands in similar landscape positions are driven by similar hydrodynamic and ecological processes and therefore function similarly. This method groups wetlands according to where they occur in the watershed, rather than by the vegetative structure. Individual models are then created for each class of wetland, to assess how a wetland performs a specific function. The functions fit into the general categories of water quality, water quantity, and habitat.

HGM has the advantage of being regionalized; there are separate models for eastern and western Washington. Efforts to develop similar HGM models for wetlands elsewhere throughout the United States are currently underway. The HGM approach is strengthened through the use of a large set of reference wetlands that form the basis for comparing field data collected on a given wetland to data from the reference wetlands.

WSDOT specialists are actively involved in cooperative efforts with other agencies and with wetland scientists to develop and test the HGM models for Washington. Two of these models are in the early draft stage and are expected to be available for use by the fall of 1997. We anticipate that this tool will be usable for assessing existing wetlands, as well as for guiding mitigation design targeted for specific functions. HGM may also be useful for evaluating the performance of mitigation sites.

Future Directions - Watershed Based Mitigation Using Functions Assessment

Improved methods for wetland functions assessment will enhance the melding of mitigation planning with watershed management. This will allow better ways to identify high functioning wetlands for priorities in impact avoidance. When functions of wetlands can be better determined and quantified, mitigation can better target specific functions. Watershed areas where certain key functions have been lost can be targeted for restoration of specific lost functions as part of project mitigation. Functions may provide the conceptual basis needed to relate project impact mitigation to existing watershed priorities.

Recommendations

7-1 Continue to explore ways to integrate wetland functions assessment into project analysis and mitigation.

7-2 Continue WSDOT's involvement with HGM development and field testing. If this proves to be a reliable and practical method, as anticipated, it should be incorporated as appropriate into WSDOT project analysis and mitigation.

- 7-3 When HGM is further developed, work with other agencies to devise a system to quantify wetland functions as a basis for assigning and withdrawing credit from a wetland bank.
- 7-4 WSDOT should encourage more consistency among regulators as functions assessment is improved.

Appendix A

State of Washington 54th Legislature 1995 Regular Session

BY Senators Prentice, Owen, Haugen, Wood, Kohl, Fairley, Sellar, Rasmussen, Oke, Schow and Winsley

Read first time 02/13/95. Referred to Committee on Transportation.

1 AN ACT Relating to wetlands owned by the department of
2 transportation; and creating a new section.

3 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

4 NEW SECTION. Sec. 1. The department of transportation shall
5 develop a strategic plan for the long-term monitoring and maintenance6 of wetlands owned
by the department. The plan -at consider:

7 (1) An evaluation of the long -term monitoring and
maintenance costs

8 of existing and planned sites;

9 (2) The feasibility of developing wetland banks
that could be used

10 by other public entities. Consideration must be
given to allocating

11 costs for the initial development of a bank and to
prorating ongoing

12 monitoring and maintenance costs;

13 (3) The feasibility of selling, contracting, or
transferring title

14 of department-owned wetland bank property or
mitigation sites to other

15 public agencies or nonprofit environmental
corporations;

16 (4) A legal anialysia of the state constitutional
prohibition

17 against lending ofthe state's cred it;

1 (5) An analysis of the statutory barriers
prohibiting mitigation of
2 wetland losses an a regional or watershed basi s and
reco-endations tcr
3 achieving a regional or watershed approach to
mitigation;
4 (6) A summary -of plarred or potential wetland
banks; and
5 .(7) An analysis of how wetland habitat can be valued
and quantified
6 and how mitigation credits could be developed.
7 The department shall present the strategic plan to the
standing
8 committees on transportation of the senate and
the house of
9 representatives no later t-ban January 15, 1997.1

Appendix B

The state constitution prohibits the state from lending its credit. Specific to WSDOT wetlands management the question to be answered is whether the provision prevents WSDOT from:

Background

- developing wetland mitigation banks
- selling credits in the bank to private parties or other public entities
- transferring title to the completed bank to a private party or other public entity

Findings

- This prohibition will not act as a bar as long as the State receives value for whatever it creates or transfers
- WSDOT may develop mitigation banks that have more mitigation credits than the agency has an immediate need for
- WSDOT is testing legal and transactional approaches which may enhance title transfer to third parties
- WSDOT is not necessarily required to own mitigation properties. Mitigation can be developed and utilized on the property of others
- If credits from a WSDOT mitigation site are sold to a third party, both direct and indirect costs of the mitigation should be included in the credit price

Recommendations

- Consider and foster partnerships with other public entities, land trusts, and others as wetland banks are purchased, developed, and utilized
- Develop an accounting system for marketing wetland bank credits as well as titles to mitigation site properties
- Continue to develop and utilize legal and transactional approaches which will enhance title transfer as appropriate

WSDOT Wetland Strategy Feasibility of Implementing Watershed Mitigation Strategies and Utilizing Wetland Banks

Background

1994 Environmental Cost Savings (and Permil Coordination Study) recommendations & implementing a watershed approach for mitigation site selection and development of wetland banks to increase flexibility and cost savings in providing wetland Mitigation

- Watershed planning involves consideration of all resources, uses and constraints within defined area when implementing restoration and enhancement projects.
- Mitigation and non-regulatory enhancement projects presently done on opportunistic, site-by-site basis.

Leads to piecemeal approach to watershed improvement programs.

- Piecemeal approach limits ability of stakeholders to address highest priority needs of basin, results in sites not attaining highest functional level, limits opportunities for stakeholders to implement cost-share basin improvement projects.

Wetland Banking

- Banking MOA with federal and state regulatory agencies signed in 1994
- Wetland banks consolidate wetland mitigation for small impact acreage into larger more cost-effective and ecologically functional sites
- Coordination of mitigation efforts with watershed plans requires more work than project by project mitigation, but can result in significantly higher environmental benefit.
- 50% of bank acreage available immediately after construction., remainder not available for at least 5 years.

**WSDOT Wetland strategy
Feasibility of Implementing Watershed Mitigation
Strategies and Utilizing Wetland Banks**

Findings

Funding

- Mitigation funds tied directly to projects.
- Banking requires a large up-front expenditure of funds for site acquisition, design and development.
- No funding mechanism currently available through WSDOT budgeting to permit advance mitigation or banking.
- Trading of surplus land is an alternative approach to wetland bank site acquisition.
- Establishment of an Advanced Environmental Mitigation Revolving Account is being proposed.

Predictability

- No predictability in whether future projects will be able to use credits from bank due in part to disparity between policy and project level staff in regulatory agencies, and due to multiple jurisdictions having regulatory control over each project.
- Need for ability to utilize out-of-kind mitigation for banking, little guidance available to jurisdictions on evaluating out-of-kind trade offs. Regulatory tendency to maintain status quo.
- Instability of basin boundaries and definition of boundaries limited to permit by permit evaluation impedes WSDOT ability to forecast future mitigation needs for banks.

Multiple Jurisdictions and Legal Issues

- Each project can have up to eight layers of regulatory oversight.
- Some Sensitive Areas Ordinances do not permit banking or mitigation of impacts off site.
- Service areas for banks are not large enough to warrant extra level of work necessary to put bank in place
- Unwillingness to allow impacts and mitigation to occur across jurisdictional lines.

Advance Mitigation Versus Mitigation Banking

- Higher regulatory comfort level with advance mitigation. Specific projects and impacts are known, banking debit projects are not identified except by service area.
- More predictable than banking.
- Negotiations only need to include agencies with direct oversight for identified projects.
- Advance mitigation less cumbersome. If completed well in advance of project impacts, may have lower ratios required. Banking agreement locks in ratios, advance mitigation permits separate ratio negotiations.

Level of additional work required for banking rather than advance mitigation warrants use of larger sites- WSDOT may choose to involve partners to utilize bank

**WSDOT Wetland Strategy
Feasibility of Implementing Watershed Mitigation
Strategies and Utilizing Wetland Banks**

Recommendations

Funding

- Continue to develop funding strategies to support implementation of the watershed pilot project in the Snohomish Basin.
- Continue to pursue land trades of surplus property for mitigation site acquisition.
- Establish a revolving account to acquire and develop sites for banking, advance mitigation, and watershed mitigation.

Predictability

- Continue working with stakeholders to integrate transportation planning with local watershed planning efforts.
- Continue developing funding strategies to support implementation of the watershed pilot project in the Snohomish basin.

Revisit the Banking Agreement, incorporating mechanism to allow local jurisdictions to become signatories to agreement for individual banks.

Develop up-front written agreements with stakeholders identifying bank- service area boundaries, permissible impacts and allowable use of out-of-kind mitigation.

Multiple Jurisdictions and Legal Issues

- Continue coordinating with potential bank partners for large bank sites.
- Seek legislative clarification on the relationship between watershed planning and the Growth Management Act.

Encourage IWRB (Interagency Wetland Review Board) to work

with CTED in offering guidance to local jurisdictions on addressing innovative mitigation strategies, banking and watershed planning in their sensitive and critical area ordinances.

WSDOT has proposed model language for Snohomish County

SAO amendments addressing innovative mitigation, mitigation banking, watershed planning.

Advance Mitigation.

Consider pursuing Advance Mitigation for known projects

WSDOT Wetland Strategy Planned or Potential Bank Sites

Background

- WSDOT signed MOU with 7 other state and federal agencies which specified the conditions under which banking could occur in 1994.
- WSDOT Banking Agreement established an Oversight Committee of those agencies to guide banking process.

Findings

- WSDOT developed a logical process to identify watersheds where bank development was justified based on future highway projects. They are the Snohomish, Puyallup and Upper Chehalis.
- The discussion next was with local and county government, to determine their preferences and needs for site selection.
- Potential sites were identified in each watershed. Opportunities in working with Land Conservation groups and NRCS were explored.

Recommendations

- Continue to identify appropriate sites beneficial to future planned transportation projects
- Continue to work with land conservancy organizations and local watershed plans to find and develop appropriate bank sites.
- For potential wetland bank sites already identified, continue efforts that will lead to site development.

WSDOT Wetland Strategy Wetland Preservation as a Mitigation Option

Background

- State and local agencies require WSDOT to compensate for wetland losses by creating, restoring, or enhancing wetlands
- Preservation of wetlands is acceptable mitigation only at high ratios (10: 1) *and* in conjunction with creation, restoration, or enhancement.

Findings

- Preservation has been underutilized because of "no net loss" policies.
- The "no net loss" policies and regulations are not effectively protecting the state's wetlands
- Preservation of wetlands under imminent threat of development is an effective mitigation option
- Cost effective
- Success is guaranteed
- Provides financial incentive for protecting high quality wetlands
- The Nature Conservancy, which is trusted by resource agencies and landowners, can provide the model

Recommendations

- Preservation of high-quality wetlands under imminent threat should be an acceptable mitigation option
- **WSDOT** should partner with regulators, planners, and implementors, to develop a wetland preservation model for Washington State
- **WSDOT** should work with resource agencies and local governments to redraft mitigation guidelines
- WSDOT should partner with preservation groups such as The Nature Conservancy and local land trusts

WSDOT Wetland Strategy

Monitoring of WSDOT Wetland mitigation Sites

Background

- Monitoring provides a means of tracking mitigation site progress and ensuring permit compliance.
- Monitoring began in 1988 with six sites; 1996, 24 sites monitored; 1997 projected at 32 sites.

Findings

- Need for development of a framework for defining wetland mitigation success.
- Uneven biological performance of wetland mitigation sites undermines WSDOT credibility.
- Lack of uniform expectations by regulatory agencies creates perception in the regulated community that wetland mitigation is a moving target.
- A well-defined feed-back loop is needed; using monitoring results can help reduce remedial action costs
- A unifying link is needed between pre-impact assessment, mitigation design, and monitoring
- Current monitoring regime does not adequately reflect the objectives set for a mitigation site

Analysis of eight years of WSDOT site data suggest the five year monitoring time frame may be unrealistic span within which to achieve certain performance standards

Recommendations

- Embrace an adaptive management stance - all parties have a vested interest in learning from mistakes as well as successes
- Use the Annual Monitoring Report to help establish feedback loop
- Develop specific questions to be answered through use of monitoring data
- Use the median values of monitoring data to set the performance standards for future mitigation sites
- Annually update database statistics producing the median values to guide future mitigation work
- State wetland impacts, mitigation objectives, and monitoring needs in terms of wetland functions and acreage requirements.
- Conduct formal delineation on sites after final monitoring year
- Expand monitoring regime as appropriate for achieving functions desired: 5-10 years
- Reduce and stagger the number of intensive monitorings

WSDOT Wetland Strategy

Maintenance of WSDOT Wetland Mitigation Sites

Background

- Wetland mitigation sites must be maintained at a certain level to meet permit requirements; sites require short term and long term maintenance; in some instances remedial action is required for permit compliance
- WSDOT maintenance crews have traditionally maintained highways, stormwater drainage systems, rest areas, and other transportation facilities; as mitigation sites were developed it was assumed the crews would maintain these areas as well

Findings

- Short term maintenance is conducted during the years a mitigation site undergoes monitoring; activities include prevention/repair of vandalism, litter removal, and weed and noxious weed control
- Long term maintenance begins after the conclusion of monitoring and is conducted to ensure the wetland will continue to function as designed; activities entail control of litter, vandalism, off-road vehicle use, target shooting, etc.
- Remedial actions can include regrading and/or replanting of the mitigation site, or manipulation of site hydrology

Finding Short Term Maintenance

- Training and funding of WSDOT maintenance forces has been focused on more traditional highway related facilities; with funding sources tightening, mitigation site maintenance needs can not compete.
- Without additional funding and training, it is not a workable strategy to have WSDOT maintenance forces responsible for maintaining wetland mitigation sites.
- Several alternate approaches have been developed.

Long Term Maintenance

- The issues stated for short term maintenance apply here as well.

A central issue is clearly defining what is entailed in the requirement for WSDOT to maintain its mitigation sites "in perpetuity" potential exists for multiple interpretations (Protecting a site from further development, maintaining the site in the same state as when it was created, or avoiding impacting a site to the extent a

pristine wetland would be impacted over a mitigation site are all potential interpretations of the in perpetuity requirement)

Remedial Action

Statewide, permanent funding mechanisms have not been developed and implemented

Recommendations

- Quantify short term maintenance needs and match with appropriate resources
- Seek innovative solutions to maintenance and remedial action needs; i.e. monitoring staff, volunteer groups, special work force, Washington Conservation Corps, Olympic Region approach
- Complete negotiations with regulatory agencies on definition of in perpetuity requirement
- Pursue computer software programs for projecting long term maintenance costs
- Establish a funding mechanism to finance remedial actions
- Parties responsible for conducting remedial action activities, have not been fully identified; the Washington Conservation Corps is one possible candidate

WSDOT Wetland Strategy Wetland Functions and Values

Background

- Functions-Biological & Physical Processes; Values- Social Context for Functions
- Functions assessment is important for project design impact assessment & mitigation design

Findings

- Various systems of ratios are used for mitigation planning. These are not always consistent among agencies
- Mitigation Ratios give predictability but limit flexibility.
- Ratios do not directly relate to wetland functions
- Wetland assessment & mitigation should emphasize functions as well as size and type.
- Hydrogeomorphic. model (HGM) now in development reflects the most current understanding of wetlands and looks to be more suitable to WSDOT needs than other methods
- HGM differentiates between wetlands of different landscape positions & HGM models are developed to be region-specific
- Wetland functions assessment may be a better basis for watershed level mitigation than ratios, since it can relate to planning objectives.

Recommendations

- Develop means to incorporate function assessment more fully in wetland programs
- WSDOT should actively support efforts to improve functions assessment, and continue involvement in HGM development and testing.
- WSDOT should encourage more consistency among regulators as functions assessment is improved
- Wetland functions should be considered in credit systems developed for wetland banks